DOCUMENT RESUME

ED 337 334 RC 018 317

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TITLE The Health Status of Children Living in Urban Appalachian Neighborhoods.
PUB DATE Nov 90
NOTE 12p.; Paper presented at the Conference on Appalachia (Lexington, KY, November 6-7, 1990).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Black Youth; *Child Health; Children; Clinical Diagnosis; Comparative Analysis; Cultural Differences; *Diseases; Elementary Education; Ethnic Groups; *Health Needs; Hospitalized Children; Primary Health Care; *Urban Youth
IDENTIFIERS *Appalachian People; Ohio (Cincinnati); Standardized Morbidity Ratio

ABSTRACT

This study compares the health status of Appalachian children living in Cincinnati neighborhoods to that of children living in five predominantly low-income black neighborhoods and children living in the rest of Cincinnati. Age-specific, standardized morbidity ratio analyses were performed to compare the frequency of admissions to hospital and discharge diagnoses of the three groups of children between July 1, 1985 and June 30, 1990. Black and Appalachian groups were identified based on zip codes designated as having residential concentrations of these groups. Little difference was found in hospital admission rates across the three groups. However, contrasting children 0 to 4 years old living in the Appalachian zip codes with children of the same age from the city of Cincinnati as a whole, Appalachian children were discharged more frequently from the hospital with diseases classified as viral or bacterial infections of the gastrointestinal, nervous, and respiratory systems, diseases of the genito-urinary system, injuries, and poisonings. Among the children 5 to 11 years of age, the Appalachian children were discharged more frequently with bacterial infections, diseases of the ear, digestive system, genito-urinary system, and injuries. The study concludes that children living in predominantly Appalachian zip codes have distinctive health care needs that differ from those of children living in predominantly black zip codes and in the city at large. Related public health questions include primary care facilities and preventative care. This document contains data tables and 24 references.

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THE HEALTH STATUS OF CHILDREN LIVING IN URBAN APPALACHIAN NEIGHBORHOODS

BY

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THE HEALTH STATUS OF CHILDREN LIVING IN URBAN APPALACHIAN NEIGHBORHOODS

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ABSTRACT

The literature on the health status of Appalachian children living in cities outside the region is almost nonexistent. Previous research has established the concentrations of Appalachians in Cincinnati neighborhoods; this article is based on five years of admissions to Cincinnati's Children's Hospital Medical Center. Age-specific, standardized morbidity ratio analyses are performed to compare the frequency of discharge diagnoses of children living in five predominantly white Appalachian neighborhoods with children from the rest of Cincinnati and from five predominantly low-income black neighborhoods. The health status of urban Appalachian children differs markedly from that of poor black children and the general pediatric population of Cincinnati.

Out-migration has been a recognized phenomenon in the life of the Appalachian region for most of the twentieth century. Economic and socio-cultural factors have combined to influence the movement of people into and out of Appalachia with increasing significance in the past sixty years (Brown and Hillery, 1962; McCoy and Brown, 1981; Obermiller and Oldendick, 1987). As a result of the migration streams, multigenerational Appalachian families now constitute the majority population in many urban neighborhoods across the midwest.

The social adjustment of Appalachian families moving to urban areas followed a familiar pattern: it focused initially on finding housing and employment, then on getting an education, and finally on deferred concerns such as health care. A growing body of literature examines the settlement and employment patterns and the educational attainment of urban Appalachian adults (Obermiller and Philliber, 1987; Philliber, 1981; Philliber and McCoy, 1981). However, the status of urban Appalachian children, apart from issues revolving around their education, remains largely unexplored.

In this essay we focus on the health issues affecting Appalachian children living in the greater Cincinnati area. We delineate the health status of urban Appalachian children by comparing them with other children from metropolitan Cincinnati, and with black children from families with a socioeconomic status similar to that of the Appalachians.

The Cincinnati metropolitan area has an extensive history of Appalachian in-migration and an equally extensive repertoire of current social research comparing urban Appalachians with non-Appalachian whites and blacks. Although the data we use focus on Appalachian children in the Cincinnati area, we believe that our findings can be extrapolated to urban Appalachians living in similar metropolitan areas outside the region.

Previous Studies

Studies conducted within the region on the health of Appalachian children have concentrated primarily on mental health (Abbott, 1989; Looff, 1971), although more recently health care delivery (Mabry, 1989) and the effects of pollution (Osborne *et al.*, 1990) have come under scrutiny.

The literature on Appalachian children living in urban areas outside the region is sparse; it is composed primarily of curriculum manuals (Stafford *et al.*, 1979; Urban Appalachian Council, 1989) and school studies (Borman with Mueninghoff, 1983; Borman and Spring, 1984; Wagner, 1977). Current research on the health status of urban Appalachians is equally meager (Friedl, 1983; Obermiller and Oldendick, 1989); it is almost nonexistent for Appalachian youths in urban settings (Lower Price Hill Task Force, 1990; McCoy and Watkins, 1980).

The Current Study

In order to gain insight on the health status of children living in urban Appalachian neighborhoods, we examined five years (July 1, 1985 to June 30, 1990) of inpatient admissions to Children's Hospital Medical Center (CHMC) in Cincinnati, the only hospital in the area to admit young children. The data set contains demographic information including the zip code of the patient's residence and the primary discharge diagnosis. The diagnoses are grouped according to the ninth revision of the International Classification of Disease (ICD-9).

We performed standardized morbidity ratio (SMR) analyses on these data. The SMR analysis is the ratio of the observed frequency of specific discharge diagnoses among the Appalachian children to an expected frequency based on some other population. We use two comparison populations in these analyses. First, the frequencies of discharge diagnoses of

children from predominantly white Appalachian zip codes are compared with the frequencies of the same diagnoses among children from the city of Cincinnati as a whole. Five Appalachian zip codes are identified on the basis of prior research, which established the residential concentration of Appalachians in certain Cincinnati neighborhoods (Fowler, 1981; Fowler and Davies, 1972; Maloney, 1974, 1985). Second, discharge diagnostic groupings from the five heavily white Appalachian zip codes are contrasted with those from five low socio-economic (SES), predominantly black zip codes.

To avoid the bias created by including multiple admissions per patient in the data set, we conducted the analyses using only one randomly selected admission per patient per year of the study period.

Findings

The SMR method of analysis contrasts the hospital discharge diagnoses of children living in predominantly white Appalachian zip codes with those of children living in the city of Cincinnati as a whole and of children in predominantly black zip codes. Demographic characteristics of these three study groups are presented in Table 1. The number of children 0 to 4 and 5 to 11 living in the Appalachian zip codes is approximately 1% fewer than in the city-wide zip codes and 2% fewer than in the black zip codes. The Appalachian zip codes are more racially homogeneous than the black zip codes; the Appalachian zip codes are 95% white, whereas the black zip codes are only 72% black. The ranges in median income for the Appalachian and the black zip codes do not overlap; the black zip codes are poorer than the Appalachian zip codes. The median income for the city of Cincinnati is within the range of the median incomes of the Appalachian zip codes.

Admission frequencies are presented in Table 2. A total of 1,843 children under 18 years of age from Appalachian neighborhoods were admitted to CHMC during the five-year study period; they account for a total of 2,514 admissions. From the city of Cincinnati, 16,838 children were admitted; 2,691 children were admitted from the predominantly black zip codes. The average number of admissions of children who were admitted at least once during the study period is comparable among the three study populations: this average ranges between 1.4 and 1.5. The average length of stay in the hospital varies by one day among the three study populations: the average length of stay for Appalachian children is 4.2 days, for children city-wide it is 5.1 days, and for black children it is 5.2 days.

There are comparable percentages of children from each of the study populations in the three age groups. Between 68% and 71% of the admissions are among the children 0 to 4 years old; 19% to 21% of the admissions are among the children 5 to 11 years old; and 10% to 12% of the admissions are among the children 12 to 17 years old. Although Table 2 presents data pertaining to children under age 18, this paper will focus on children below 12 years of age because children 12 and older may be treated at hospitals other than CHMC.

The significant results of the SMR analyses are presented in ascending order by ICD-9 code in Tables 3 to 7. There is no other significance to the order in which the ICD-9 disease classifications are listed in the tables.

Table 3 displays the significant results of the SMR analysis contrasting children 0 to 4 years old living in the Appalachian zip codes with children of the same age from the city of Cincinnati as a whole. The children living in the predominantly Appalachian zip codes are discharged more frequently from the hospital with diseases classified as viral or bacterial infections of the gastrointestinal, nervous, and respiratory systems, diseases of the genito-urinary system, symptoms, and injuries and poisonings. The viral and bacterial infections include viral and bacterial meningitis, intestinal infections including infectious colitis, enteritis, and gastroenteritis, acute respiratory infections, and croup. Urinary tract infections are the most common disease of the genito-urinary system. The symptoms classifica-

TABLE 1
1987 DEMOGRAPHIC CHARACTERISTICS OF CHILDREN (<18 YEARS) ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY WHITE APPALACHIAN, CITY OF CINCINNATI, AND PREDOMINANTLY BLACK ZIP CODES. (SOURCE: CACI)

ZIP CODES	TOTAL POPULATION	% BY AGE IN YEARS 0-4	5-11	12-17	% BY RACE WHITE	BLACK	RANGE IN MEDIAN INCOME
APPALACHIAN	59,318	8.7	10.9	8.5	94.5	4.8	18,268 (L) 28,077 (U)
CINCINNATI	852,421	7.8	9.8	8.6	79.8	19.3	25,375[a]
BLACK	61,119	10.6	12.5	9.6	7.2	72.2	8,007 (L) 16,707 (U)

[a] Median household income for the city of Cincinnati.

TABLE 2
ADMISSIONS OF CHILDREN (YEARS) TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY WHITE APPALACHIAN, CITY OF CINCINNATI, AND PREDOMINANTLY BLACK ZIP CODES

ZIP CODES	TOTAL # CHILDREN ADMITTED	TOTAL ADMISSIONS	# ADMISSIONS INCLUDED IN SMR ANALYSES[a]	AGES IN YEARS[b] 0-4 (%)	5-11 (%)	12-17[c] (%)
APPALACHIAN	1,843	2,514	2,112	1,482 (70)	416 (20)	214 (10)
CINCINNATI	16,838	23,019	17,316	11,721 (68)	3,590 (21)	2,005 (12)
BLACK	2,691	3,929	3,253	2,299 (71)	606 (19)	348 (11)

[a] SMR analyses based on 1 randomly selected admission per child per year of the study period. Therefore, the same child may be included more than once in the SMR analyses.
[b] Ages of children included in the SMR analyses.
[c] This age group is not included in this paper.

TABLE 3
DISEASE-SPECIFIC ELEVATED STANDARDIZED MORBIDITY RATIOS (SMR) (LOWER LIMIT OF 95% CI 1) FOR CHILDREN LESS THAN 5 YEARS OF AGE ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY APPALACHIAN ZIP CODES BASED ON CITY OF CINCINNATI RATES.

ICD-9 DISEASE CLASSIFICATIONS	SMR (95% CI)	
Intestinal Infectious Diseases	1.42	(1.1, 1.7)
Other Bacterial Infections & HIV Infection	1.61	(1.1, 2.2)
Poliomyelitis & Other Non-Arthropod-Borne Viral Diseases of Central Nervous System	2.33	(1.8, 2.9)
Other Diseases Due to Virus & Chlamydia	1.87	(1.5, 2.2)
Inflammatory Diseases of Central Nervous System	2.11	(1.5, 2.8)
Diseases of Ear & Mastoid Process	2.10	(1.4, 2.9)
Acute Respiratory Infections	1.66	(1.4, 1.9)
Other Diseases of Upper Respiratory Tract	1.58	(1.1, 2.1)
Pneumonia & Influenza	1.39	(1.1, 1.7)
Diseases of Genitourinary System	2.42	(1.8, 3.1)
Symptoms	1.61	(1.4, 1.9)
Fractures	2.35	(1.6, 3.3)
Contusion with Intact Skin Surface	5.94	(1.1,14.6)

NOTE: SMR analysis is based on 1 random admission per patient per year of study period.

tion includes convulsions, fever, unspecified respiratory abnormalities, and failure to thrive. The principal injuries are skull and thigh fractures and bruises. The frequencies of these specific discharge diagnoses range from 40% higher to almost six times the city-wide rate for this age group.

Table 4 presents the significant results of the SMR analysis contrasting children 5 to 11 years old in the Appalachian zip codes with those in all Cincinnati zip codes. The children from the Appalachian zip codes are discharged more frequently with viral and bacterial infections, diseases of the respiratory and genito-urinary system, and injuries. The bacterial and viral infections are primarily strep throat, chicken pox with complications, and herpes infections. Ear infections and perforation of tympanic membrane account for the diseases of the ear. The most frequently diagnosed diseases of the genito-urinary system are infections of the kidneys and urinary tract. The "superficial injury" classification includes primarily abrasions of the head and neck and insect bites. These classifications are similar to those in the findings presented for the children less than 5 years of age in Table 3, but the SMRs are larger: these increased frequencies range from twice to almost 12 times the city rate.

In none of the SMR analyses contrasting children from the Appalachian zip codes with children from the city of Cincinnati are the discharge frequencies for the Appalachian children significantly less than the expected frequencies based on children from the city as a whole.

Table 5 presents the significant elevated results of the SMR analyses contrasting children 0 to 4 and 5 to 11 years of age living in predominantly Appalachian zip codes with children in the same age groups living in predominantly black zip codes. Children less than 5 years of age are discharged more frequently with diagnoses of viral diseases of the central nervous system, such as viral meningitis, and diseases of the genito-urinary system, such as urinary tract infections. These two disease classifications are similarly elevated in the SMR analysis based on children 0 to 4 years of age living in the Cincinnati zip codes.

Among the children 5 to 11 years of age, the Appalachian children are discharged more frequently with bacterial infections, diseases of the ear, digestive system, genito-urinary system, and injuries. With a few exceptions, the elevated SMRs are comparable to the SMRs reported in Table 4 contrasting children 5 to 11 years of age from Appalachian zip codes with those from the city as a whole. The Appalachian children are discharged seven times more frequently than the children from the black zip codes with diagnoses of superficial injury. The frequency of diseases of the digestive system is almost three times as high among the children from the Appalachian zip codes as among the children from the black zip codes. This disease category includes such diagnoses as gastritis and appendicitis.

In the SMR analyses contrasting children from the Appalachian zip codes with children from the predominantly black zip codes, children from the Appalachian zip codes are discharged significantly less frequently with certain disease

TABLE 4

DISEASE-SPECIFIC ELEVATED STANDARDIZED MORBIDITY RATIOS (SMR) (LOWER LIMIT OF 95% CI 1) FOR CHILDREN 5-11 YEARS OF AGE ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY APPALACHIAN ZIP CODES BASED ON CITY OF CINCINNATI RATES.

ICD-9 DISEASE CLASSIFICATIONS	SMR (95% CI)	
Other Bacterial Infections & HIV Infection	2.56	(1.1, 4.6)
Viral Diseases Accompanied by Exanthem	3.70	(1.2, 7.7)
Other Diseases Due to Virus & Chlamydia	2.17	(1.1, 3.6)
Diseases of Ear & Mastoid Process	4.11	(2.9, 5.6)
Diseases of Genitourinary System	2.24	(1.4, 3.3)
Open Wound of Head, Neck, Upper & Lower Limbs	2.42	(1.1, 4.3)
Superficial Injury	11.85	(4.3, 23.2)
Complications of Surgical & Medical Care, Not Elsewhere Specified	2.62	(1.5, 4.0)

NOTE: SMR analysis is based on 1 random admission per patient per year of study period.

TABLE 5
DISEASE-SPECIFIC, ELEVATED STANDARDIZED MORBIDITY RATIOS (SMR) (LOWER LIMIT OF 95% CI 1) FOR CHILDREN LESS THAN 12 YEARS OF AGE ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY APPALACHIAN ZIP CODES, BASED ON PREDOMINANTLY BLACK CINCINNATI ZIP CODE RATES.

ICD-9 DISEASE CLASSIFICATIONS	SMR (95% CI)	
CHILDREN LESS THAN 5 YEARS OF AGE		
Poliomyelitis & Other Non-Arthropod-Borne Viral Diseases of Central Nervous System	1.40	(1.1, 1.7)
Diseases of Genitourinary System	2.24	(1.4, 3.3)
CHILDREN 5-11 YEARS OF AGE		
Other Bacterial Infections & HIV Infection	3.15	(1.3, 5.7)
Diseases of Ear & Mastoid Process	4.13	(2.9, 5.6)
Diseases of Digestive System	2.56	(1.4, 4.1)
Diseases of Genitourinary System	3.37	(2.1, 5.0)
Superficial Injury	7.08	(2.5, 13.9)
Complications of Surgical & Medical Care	2.87	(1.7, 4.4)

NOTE: SMR analysis is based on 1 admission per patient per year of study period.

classifications than children from the predominantly black zip codes. (These lower SMRs are presented in Table 6 for children 0 to 4 years of age and in Table 7 for children 5 to 11 years of age.) Children less than five years of age living in the predominantly Appalachian zip codes are discharged less frequently with diseases of the respiratory system, diseases of the skin and subcutaneous tissue, congenital anomalies, symptoms, and injuries and poisonings. The respiratory diseases include pneumonia and influenza; the skin diseases include inflammations of connective tissue as well as skin infections and irritations.

Children 5 to 11 years of age living in the predominantly Appalachian zip codes are discharged less frequently than black children with diseases of the central nervous and respiratory systems, diseases of the skin and subcutaneous tissue, symptoms, and injuries and poisonings.

Discussion

The SMR analyses presented in this paper are based on five years of inpatient admissions to the Children's Hospital Medical Center in Cincinnati, the only hospital in the area to admit children under eight years of age. Rates of admissions to other city hospitals increase with age. Therefore our analyses focusing on children less than five years of age are based on a complete enumeration of all hospital admissions in this age group. The analyses focusing on children 5 to 11 years old are based on a less complete enumeration of hospital admissions.

To assess whether admission rates to the CHMC differ among the three study populations by age group, we review the data presented in Tables 1 and 2. The data presented in Table 1 demonstrate that the percentages of children aged 0 to 4 and 5 to 11 in the Appalachian zip codes are between the percentages for the city-wide and the predominantly black zip codes. The data presented in Table 2 show that, for the same age groups, the percentages of children admitted to CHMC from the Appalachian zip codes are between the percentages for the city-wide and the predominantly black zip codes. On the basis of these aggregated data, it appears that the admission frequencies do not differ by age group among these three populations.

The results of a standardized morbidity ratio analysis are, in part, a function of the population on which the expected frequencies are calculated. We selected the city of Cincinnati as the de facto public health standard. The children from the predominantly Appalachian zip codes in both age groups are hospitalized more frequently than children from the city as a whole for diseases classified as infectious and parasitic diseases, diseases of the ear and mastoid process, diseases of the

TABLE 6
DISEASE-SPECIFIC DEPRESSED STANDARDIZED MORBIDITY RATIOS (SMR) (UPPER LIMIT OF 95% CI) FOR CHILDREN LESS THAN 5 YEARS OF AGE ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY APPALACHIAN ZIP CODES, BASED ON PREDOMINANTLY BLACK CINCINNATI ZIP CODE RATES.

ICD-9 DISEASE CLASSIFICATIONS	SMR (95% CI)	
Pneumonia & Influenza	0.68	(0.54, 0.85)
Chronic Obstructive Pulmonary Disease & Allied Conditions	0.49	(0.41, 0.58)
Pneumoconioses & Other Lung Diseases Due to External Agents	0.31	(0.03, 0.90)
Other Diseases of Respiratory System	0.63	(0.37, 0.96)
Diseases of Skin & Subcutaneous Tissue	0.61	(0.38, 0.91)
Congenital Anomalies	0.63	(0.43, 0.87)
Symptoms	0.82	(0.71, 0.94)
Intracranial Injury, Excluding Skull Fracture	0.60	(0.39, 0.84)
Open Wound of Head, Neck, Upper & Lower Limbs	0.44	(0.16, 0.87)
Poisoning by Drugs, Medicinal & Biologic Substances	0.54	(0.32, 0.82)
Toxic Effects of Substances Chiefly Non-Medicinal as to Source	0.36	(0.20, 0.56)
Other & Unspecified Effects of External Causes	0.30	(0.08, 0.66)
Supplementary Classification of Factors Influencing Health Status & Contact with Health Services	0.46	(0.18, 0.87)

NOTE: SMR analysis is based on 1 random admission per patient per year of study period.

genito-urinary system, and injuries. These children are never admitted less frequently than their Cincinnati counterparts for any disease classification.

In the 0- to 4-year-old age group, the SMRs are less than 3, with one exception: contusion with intact skin surface. Although these SMRs are significant, they are low. However, there is consistency among the significantly elevated SMRs among related diagnostic groupings: infections and parasitic diseases, diseases of the central nervous system and sense organs, and diseases of the respiratory system. These results do not appear to be the statistical artifacts of multiple comparisons. Rather, the interrelatedness of the disease classifications suggests that the results are substantive findings.

The SMRs calculated for the 5- to 11-year-old age group are larger than those for the younger group. The Appalachian children appear to be diagnosed in fewer different ICD-9 disease classifications than their siblings aged 0 to 4, but suffer more frequent health problems than children of the same age group from the city as a whole. In view of the previous discussion in this section concerning percentages of children and admission frequencies by age group in the study populations, it appears that this age-related increase in the magnitude of the SMRs is not an artifact of admission frequencies to other hospitals which differ between these two populations, but a real change in relative health with age.

To control for differences in socio-economic status, we also selected zip codes containing predominantly poor, black residents to compare with residents in the Appalachian zip codes. The black children in both age groups are hospitalized more frequently than their Appalachian counterparts with diagnoses classified as diseases of the respiratory system, diseases of the

TABLE 7
DISEASE-SPECIFIC, DEPRESSED STANDARDIZED MORBIDITY RATIOS (SMR) (UPPER LIMIT OF 95% CI) FOR CHILDREN 5-11 YEARS OF AGE ADMITTED TO CHILDREN'S HOSPITAL MEDICAL CENTER (7/1/1985-6/30/1990) FROM PREDOMINANTLY APPALACHIAN ZIP CODES, BASED ON PREDOMINANTLY BLACK CINCINNATI ZIP CODE RATES.

ICD-9 DISEASE CLASSIFICATIONS	SMR (95% CI)	
Other Diseases of Central Nervous System	0.30	(0.03, 0.85)
Chronic Obstructive Pulmonary Disease & Allied Conditions	0.30	(0.23, 0.38)
Other Diseases of Respiratory System	0.30	(0.03, 0.85)
Diseases of Skin & Subcutaneous Tissue	0.56	(0.30, 0.96)
Symptoms	0.64	(0.42, 0.91)
Poisoning by Drugs, Medicinal & Biologic Substances	0.45	(0.14, 0.94)
Toxic Effects of Substances Chiefly Non-Medicinal as to Source	0.17	(0.00, 0.66)

NOTE: SMR analysis is based on 1 admission per patient per year of study period.

skin and subcutaneous tissue, symptoms, and injuries and poisonings.

The children from the black zip codes come from homes with lower median incomes than those from the Appalachian zip codes. The relatively high frequencies of hospital admissions and the low socio-economic status observed among the children from the predominantly black zip codes are consistent with the often-observed positive correlation between low income and poor health status.

Among Appalachian children, however, higher incomes do not translate directly into better health status. Appalachian children are admitted more frequently for diagnoses classified as diseases of the ear and mastoid process, diseases of the genito-urinary system, and superficial injury. These results are remarkable in light of the poor health status of the black children with whom the Appalachian children are being compared.

The fact that higher income does not always correlate positively with better health status for Appalachian children is coherent with the general principle that the key indicators of socio-economic status include educational attainment and occupational status as well as income. Longitudinal research in Cincinnati has shown that the median income for urban Appalachians is similar to that of non-Appalachian whites, whereas Appalachian educational attainment and occupational status more closely resemble those of non-Appalachian blacks (Obermiller and Maloney, forthcoming).

The selection of race as a surrogate measure of socio-economic status introduces race as a potential confounder in the analysis. It is necessary to assess the extent to which race alone might determine access to medical care and/or utilization of medical services. As we pointed out in the beginning of this section, these aggregated data demonstrate no difference between these two populations in admission frequencies by age group. Comparable percentages of children in each age group live in the Appalachian and the black zip codes. Also, the admissions to CHMC reflect the same percentages by age group for these two populations. On the basis of population, there is no indication that race affects hospital admissions in this city.

In addition, aggregate data based on relatively large populations can mask trends among subpopulations. In analyzing citywide and aggregated zip code data, health issues facing residents of individual neighborhoods can be lost. The health risks faced by these subgroups can be different and even more critical than those affecting the larger population. For example, the children (0 to 4 years old) in one low-income Appalachian neighborhood in Cincinnati are admitted more frequently for diseases classified as toxic effects of substances chiefly non-medical as to source (SMR=5.15) and viral diseases accompanied by exanthem (SMR=11.04) than children from other

low-income Appalachian zip codes (Lower Price Hill Task Force, 1990).

Conclusion

Several conclusions are apparent from the results of the SMR analyses presented here. Children from predominantly Appalachian zip codes and children from predominantly poor black zip codes have numerous health problems that require hospitalization. The health status of urban Appalachian children differs markedly from that of poor black children and from that of the general pediatric population of Cincinnati. The health status of poor black children living in Cincinnati is generally worse than that of their Appalachian counterparts. This disparity between black and Appalachian children, however, highlights the severity of the health conditions for which Appalachian youths are admitted to the hospital more frequently than black children. Children living in predominantly Appalachian zip codes have distinctive health care needs that differ from those of children living in predominantly black zip codes and in the city at large.

These findings raise a number of significant public health questions. What patterns of utilization of primary care facilities prevail among Appalachian and poor black children? Do the rates of hospitalization for specific disease classifications reflect a delay in obtaining health care, or do these hospitalizations reflect underlying health risks in these two populations? Would strategies to improve preventive health behaviors and utilization of primary medical care facilities be more effective than strategies to eliminate unsafe conditions in the physical environments of these children? Do the aggregate data mask significant differences in health status within the Appalachian community? The results presented in this paper demonstrate that answers to these questions are a compelling concern, not merely a matter of academic interest.

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